

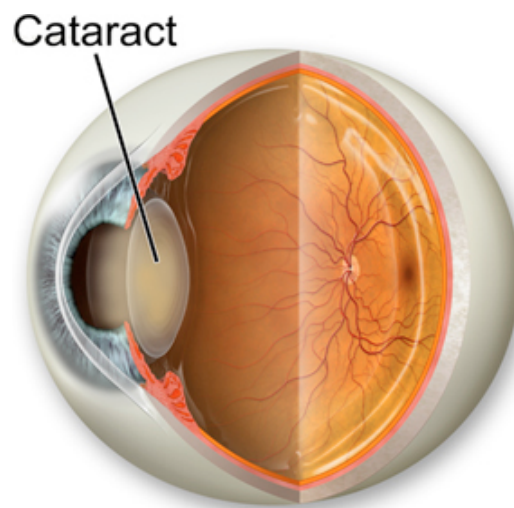
## Cataract Surgery

The lens of the eye is normally transparent. If a cloudy area develops in the lens, it is called a cataract. This reduces the amount of light that passes through the lens resulting in vision that becomes increasingly poor.

Removal of a cataract is one of the most common surgical procedures performed in Australia. It has a high rate of success due to the modern methods used.

If the eye is otherwise healthy, the likelihood is that cataract surgery will restore good vision. If there is macular degeneration, glaucoma or diabetes, final vision may be limited by these conditions.

Of every 100 operations to remove a cataract, 99 will result in improved vision. Despite the benefits of modern cataract surgery, there are risks. These will be discussed later.



### Causes and symptoms

Cataracts develop as a normal part of the ageing process. By the age of 60, about half of all adults will have some cataract formation. Some risk factors that may influence the development of cataracts include sunlight exposure, previous eye surgery, previous eye injury and long term steroid medications.

The earliest symptoms can begin with glare and sensitivity to bright light. Later, as the cataract continues to worsen, haloes may appear around lights. Haloes are especially noticeable when driving at night, at the same time, night vision typically decreases. Vision typically becomes more blurred, hazy and foggy. Near vision (without glasses) may actually improve as the power of the eye changes. Glasses prescription tends to change more frequently. Colours often become duller and darker.

### Treatment

Removal of a cataract is warranted when vision has worsened or if daily activities, reading, driving and hobbies are affected, or if personal safety is at risk. If vision is unaffected or only slightly affected by a cataract, treatment may be delayed.

Cataracts cannot be cured by any type of medication, eye exercise, alternative therapy, diet or glasses. Surgery is the only way to remove a cataract. With cataract surgery, the natural lens is replaced by a very small implant called an intraocular lens (IOL).

## Intraocular lens

Intraocular lenses (IOLs) are artificial lenses used in modern cataract surgery. They are implanted in the eye's capsular bag to replace the crystalline lens clouded by the cataract.

IOLs can simulate the refractive properties of the natural lens, but they do not have the ability to adapt their shape to change focus. IOLs are designed to meet the requirements of the individual patient's vision.

Intraocular lenses are made of a soft, synthetic, and biocompatible plastic (acrylic). A typical IOL measures approximately between 13 mm in diameter. The thickness of the lens can vary, depending on its refractive power.

The corrective power of the lens is individually calculated and may differ for each eye. An IOL is transparent and neither visible nor perceptible in the eye.

## Preparing for surgery

Before the cataract surgery is performed, the eye first needs to be measured to find the correct diopter power for the IOL. This measurement will be performed using the Zeiss IOL Master 700. A comprehensive array of tests will also be performed to assess the health of other structures in the eye.

On the day of surgery, the selected lens will be implanted in the eye. The cataract surgery is performed one eye at a time, usually with 1- 4 weeks in between.

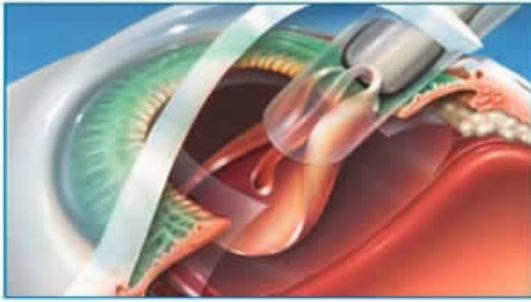
## On the day of surgery

Cataract surgery is performed in a hospital. Directly before surgery, the anaesthetist will insert an intravenous cannula to give you sedation. While you are sedated, you will receive an anaesthetic injection under your eye to numb your eye for the procedure. You will be brought into the operation room lying on a surgical bed, and your head will be placed underneath a surgical microscope.

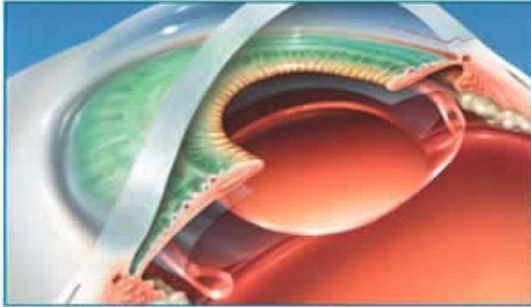
During the procedure you will feel no pain and have minimal or no ability see or move your eye and eyelids. Some patients see some vague movement or lights. During the surgery you will be given more intravenous sedation, called twilight sedation.

The surgery usually takes between 15 to 20 minutes.





First, the surgeon makes a small 2-2.5 mm incision in your cornea to access the inside of the eye. The surgeon then opens the capsular bag where the natural lens is located. The lens is softened, broken up, and carefully removed with gentle suction (phacoemulsification). The IOL is carefully positioned where the original lens was before. Usually there are no sutures required, which aids a quicker recovery.



Finally, a patch is placed over the eye to protect it. It can be removed the following day after surgery. You will be allowed to go home after a short observation period. As the anaesthetic wears off after the procedure, you might feel some minor discomfort for a short time. This can easily be treated with over-the-counter pain medication.

## After surgery

Recovery after cataract surgery is relatively short – it can take anywhere from a few days to a month, depending on the patient. You will immediately be able to see the following day after the operation. However, for the first few days you will likely experience blurriness and feel some mild discomfort. There may be some bruising initially. Best vision is obtained after 4 weeks. Medicated eye drops will be required for 4 weeks. Any prescription glasses after surgery should be prescribed only four to six weeks later.

Working at your computer or watching TV for a short amount of time should be possible the following day after your surgery. Avoid getting dirt in the eye. Discuss your specific restrictions with your doctor, but usually sports like tennis and golf should be avoided for at least one week. Swimming should be avoided for at least two weeks. How quickly you can drive after surgery is variable, depending on each patient's personal circumstance.

Usually, your eye will be checked the following day after surgery by an orthoptist. Your vision and eye pressure will be checked, and instructions will be given on how to use the prescribed drops. Additional examinations are typically scheduled over the following 1-3 weeks to monitor the healing process. The final follow-up appointment will take place with your optometrist about a month after the cataract removal procedure.

## Types of IOLs

There are different types of intraocular lenses available today, including monofocal lenses, extended depth of focus lenses and multifocal lenses. The latter provide some extra advantages and disadvantages, including being less dependent on glasses for various activities, but seeing haloes around lights. All lenses are additionally available in toric versions.

**Monofocal** intraocular lenses are the most commonly used implants in cataract treatment. They have one focal point and can maximally improve sight at one distance: far, intermediate or near. For the remaining distances, the patient may still need to use eyeglasses. Most patients choose to have a distance focus for both eyes, and play sport, drive and watch TV without glasses. Glasses are required for computer, smartphone and reading tasks.

To become less dependent on glasses with monofocal IOLs, some patients choose to have a different focus from each eye (monovision). If the dominant eye is focused for distance, the non-dominant eye can be focused for either intermediate or near tasks. However, there is a trade-off, with some compromise in distance vision and depth perception.

**EDoF (Extended Depth of Focus)** IOLs use an optical technology that enable vision ranging from far to intermediate distances, such as a computer monitor. For close-up activities, such as reading and using a smartphone, patients implanted with EDoF lenses usually need to wear glasses. The distance vision with an EDoF IOL is somewhat reduced when compared with a monofocal IOL, and patients may notice some glare or haloes at night.

**Multifocal** IOLs have multiple focal points to provide vision for near, intermediate and far distances. They enable patients a high degree of independence from glasses. However, multifocal IOLs reduce the overall clarity of vision and cause patients to notice glare and haloes around lights. As a result, driving at night can be difficult. These IOLs are not suitable for patients with other eye conditions, such as macular degeneration. Some patients with trifocal IOLs will require a second refractive procedure to optimise the power of the eye.

**Toric** IOLs are a special type of intraocular lens that can be implanted for patients with corneal astigmatism. Astigmatism occurs when the cornea at the front of the eye has an irregular (slightly oval) shape. It causes objects at different distances to appear skewed or distorted. It is common at any age. Toric IOLs correct the distorted light rays passing through the irregularly shaped cornea, focusing them onto the retina to reduce astigmatism while treating cataracts at the same time. Monofocal, EDoF and multifocal IOLs are made with Toric versions.

## Complications and risks

While a proven, well-established, and safe procedure, cataract surgery is not completely free of risks and complications. Some side effects that can occur right after surgery include infection, swelling, increased pressure in the eye, and droopy eyelid.

Other complications include experiencing visual disturbances such as halos or glare around light sources, especially in poor lighting conditions. These phenomena are especially common after implantation of EDoF and multifocal IOLs but diminish within a few weeks or months after surgery.

In rare cases, the lens may become decentered over time.

One common complication of cataract surgery, posterior capsule opacity (PCO) occurs when remaining cells from the removed lens begin to grow over the surface of the capsule surrounding the IOL, causing your vision to become less crisp again. PCO can easily be treated with a special laser in the clinic. This is a quick and painless procedure, with no risk of infection.

As with all surgeries, there is always a risk of complications during and after the cataract procedure. However, this risk is very low, and the advantages of the treatment are incomparably higher than potential side effects.

### Laser-assisted cataract surgery

Some parts of cataract surgery can be performed with a laser. The Femtosecond Laser has been used in Sydney since approximately 2012. The laser is used to create the corneal wounds, the opening to the lens capsule, and to divide the lens. The other parts of the operation still need to be done manually, including with phacoemulsification. Recent studies show that the final visual outcomes and safety are similar between laser and normal cataract surgery techniques, though the laser technique has slightly higher rates of complications. Most surgeons do not use the laser.

### Costs

There is no standard price for cataract surgery in Australia.

Cataract surgery can be performed at a private or public hospital. Cataract surgery is covered by private health insurance, so if you have private health insurance, you should have your surgery in a private hospital. Private health insurance covers the cost of the IOL, regardless of the type chosen, so cost should not be a factor in the choice of your IOL. At Northern Sydney Cataract we offer a KNOWN-GAP fee structure for cataract surgery to minimise your out-of-pocket costs.

If you don't have private health insurance, you can choose to have your surgery in a private hospital, and have the choice of your surgeon and IOL type. There will be considerable out of pocket expenses, as Medicare only provides a small rebate. The alternative is to have the surgery in a public hospital.

In a public hospital, you can have surgery with no fees, as a public patient. You will be placed on a waiting list, and the surgery performed by the doctor allocated by the public hospital. There are usually limited choices of IOLs, with EDoF and multifocal IOLs not available. As public hospitals in Sydney are teaching hospitals, it is likely that the surgery will be performed by the hospital registrar (trainee) under the supervision of the consultant surgeon. However, you can choose to be admitted as a private patient in a public hospital, so that the surgery is performed by the consultant surgeon. There are fees associated with this option, and the waiting period and IOL limitations still apply.